

GFE	- Government Furnished Equipment
GFF	- Government Furnished Facilities
GFP	- Government Furnished Property
G Magnitude	- GEODSS reference Magnitude
GMT	- Greenwich Mean Time (Zulu); same as UTC
GMV	- Government Motor Vehicle
GOI	- GEODSS Operating Instruction
GPO	- Government Printing Office
GPQT	- GEODSS Positional Qualification Training
GRU	- Chief Administration for Intelligence (USSR)
GSA	- Government Services Administration
GSOIA	- General Security of Information Agreement
GTR	- Government Transportation Request
GVM	- Graphics Video Monitor
HA	- Hour Angle
HHS	- Department of Health and Human Services
HI	- Hawaii
HI-E	- High eccentricity
HOI	- Headquarters Operating Instruction
HOF	- Home Office Facility
HOL	- Higher Order Language
HOS	- Held on Site
HQ	- Headquarters
HRM	- Human Resource Manager
HTM	- LINK I Packed <u>High Threshold Memory</u>
HTSA/ISSA	- Host-Tenant Support Agreement/Interservice Support Agreement
IAW	- In accordance with
ICC	- Interstate Commerce Commission
ID	- Initial Distribution
IDHS	- Intelligence Data Handling System
IEU	- Issue Exception Code
IF	- Intermediate Frequency
IFB	- Invitation For Bid
IG	- Inspector General
IL/ML	- Identification List/Management Data List
IM	- Inventory Manager
IMC	- Interim Message Change
INC	- Inclination
INFO	- Information
IO	- Initial Orbit
I/O	- Input/Output
IOC	- Initial Operational Capability
IOD	- Initial Orbit Determination
IOSB	- I/O Status Block
IPB	- Illustrated Parts Breakdown
IPO	- International Pact Organization
IRV	- Inter Range Vector
ISB	- Industrial Security Bulletin
ISCRO	- Industrial Security Clearance Review Office
I&S	- Interchangeable and Substitute

I&SG	- Interchangeability and Substitution Group
ISL	- Industrial Security Letter
ISM	- Industrial Security Manual for Safeguarding Classified Information (DOD 5220.22-M)
ISR	- Industrial Security Regulation
ISSL	- Initial Spares Support List
ITIES	- Interservice Technical Information Exchange System
JAN	- January
JANAP	- Joint Army-Navy-Air Force Publication
JCN	- Job Control Number
JCS	- Joint Chiefs of Staff
JD	- Julian Date (Day of year)
JUL	- July
JUN	- June
JSS	- Joint Surveillance System Activity
K	- Kilo (Kilo = 1,000)
KGB	- Committee of State Security (Soviet Union)
Km	- Kilometer
L	- Local Time
LED	- Light Emitting Diode
LEP	- List of Effective Pages
LG	- Logistics
LJC	- Level Justification Code
LM	- Local Manufacturer
LMF	- Language and Media Format
LOAPS	- List of Applicable Publications
LOC	- Letter Of Consent, DISCO Form 560
LOG	- Logarithm
LP	- Logistics
LRA	- Local Purchase
LRC	- Local Reproduction Authorized
LRU	- Logistics Readiness Center
LS	- Line Replaceable Unit
LSB	- Logistics Specialist
LSI	- Least Significant Bit
LTM	- Large Scale Integrated Circuit
M	- Link I Packed Low Threshold Memory
MA	- Mega (Mega = 1,000,000)
MAAG	- Maneuver Assist
MAC	- Maintenance Analyst
MAG	- Military Assistance Advisory Group
MAIN	- Military Airlift Command
MAJCOM	- Magnitude
MAP	- Main Telescope
MAR	- Major Command
MAX	- Mutual Aid Program
MB	- Maintenance Analysis Referral
	- March
	- Maximum
	- Millibars
	- Megabytes



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS AIR FORCE SPACE COMMAND
PETERSON AIR FORCE BASE, COLORADO 80914-5001

13 SEP 1990

Dr Armen Victorian
PO Box 99
West PDO
Nottingham NG8 3NT
England

Dear Dr Victorian

This replies to your August 29, 1990, letter which informed us that figures 2, 3, and 4 and pages 12 through 19 were missing from GEODSS, Phase I Training Handbook. The incomplete handbook was provided to you on August 21, 1990, in response to your July 12, 1990, Freedom of Information Act (FOIA) request.

Figures and pages referenced above are releasable and attached.

We regret any inconvenience this may have caused you.

Sincerely

A handwritten signature in cursive script, reading "Bobby G. Cannon", is written over the typed name.

BOBBY G. CANNON
Chief, Records Management Division
Directorate of Information Management

1 Atch
Figures 2, 3, and 4 and
Pages 12 thru 19



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS AIR FORCE SPACE COMMAND
PETERSON AIR FORCE BASE, COLORADO 80914-5001

21 AUG 1990

Dr Armen Victorian
PO Box 99
West PDO
Nottingham NG8 3NT
England

Dear Dr Victorian

This replies to that portion of your July 12, 1990, Freedom of Information Act (FOIA) request pertaining to Information (Scientific) on Ground Based Electro-Optical Deep Space Surveillance System, capable of detecting 23,000 miles or so into space.

Ground-Based Electro-Optical Deep Space Surveillance System, Phase 1 Training Handbook and Fact Sheet are totally releasable and attached. We hope they will be of use to you.

Fees for these records are waived.

Sincerely

A handwritten signature in cursive script, reading "Sharon A. Law", is positioned above the typed name.

SHARON A. LAW
Acting Chief, Records Management Division
Directorate of Information Management

2 Atch
1. Training Handbook
2. Fact Sheet

they are generally established with multiple addressees. Thus, to reach your desired destination, your message may be sent to several other units.

a. GEODSS Capabilities. Under normal operating conditions the Executive computer provides all of the software, file support, and software/-hardware interfaces for the communications system. The Office Automation System can be reconfigured with the Applications computer providing all communications functions in the event that the Executive computer is unavailable for maintenance or software activities. Under extreme conditions, a Model 40 Teletype (TTY) unit is available at each site and may be configured for message transmission and receipt. However, since messages can not be transferred to the prime GEODSS computers, this configuration is rarely used. Communications support is accessed from the Control Console and Display Group (CCDG) through the Master Menu. The console position that is used for communications must be logged on as a station and be designated as the communications position. The major capabilities of the system include:

- (1) Circuit configuration with either the ADCCP or AUTODIN line acting as the prime circuit, with back-up provided by the other circuit in case of primary line failure.
- (2) Message Preparation and Edit. Upon selecting this function, the operator is permitted to select a blank message format for originating a message or to select a "canned" message format, such as a Status Report, Element Set Request, etc., to be edited and subsequently transmitted. In the Edit mode, the message may be scrolled, lines deleted or inserted, lines printed, or the function may be exited.
- (3) Received message file maintenance. The File Services option of the communications system permits the operator to display or print the message log, and to display or print individual messages from the message log.
- (4) Message transmission/retransmission. When the message generation function is completed, the operator will normally review the contents to ensure it is correct and then exit to the transmit option. The operator is then prompted to enter the classification, priority, sender AUTODIN or data circuit, and routing code file number. Previously generated messages may be retransmitted through the File Services Menu - Data Circuit (or AUTODIN) Transmitted File.
- (5) Primary and Alternate Routing File Maintenance. The GEODSS communications system permits the operator to establish files of predetermined addressees. The files are sequentially numbered and are used by various functions in the system, such as observation and SOI data transmission, to automatically attach the appropriate routing indicators on transmitted messages. The files may also be used when generating and transmitting a message to specify the appropriate addressees. The files are created, edited, and deleted through Communications Services Primary Menu - File Services Menu. Three primary files are maintained

i. **Sensor Performance.** This worksheet provides a consolidated summary of system performance for all three sensors. Data typically recorded includes:

- (1) Sensor availability.
- (2) Sensor red time.
- (3) Performance of global and radiometric calibrations.
- (4) SOI tracking performance.
- (5) Consolidated UCT activities.

j. **Operations Log.** The Operations Log is a time ordered recording of all significant or unusual events that have occurred with the system or outside agencies. Some events that are typically entered in the log include:

- (1) Mission planner start and stop times.
- (2) New launch notifications.
- (3) Positive/negative track reports.
- (4) Category 1 tasking events.
- (5) System problems that were encountered, including any applicable Equipment Status Reports (ESRs) and Job Control Numbers (JCNs).
- (6) Changes in the system status or configuration, including communications.
- (7) Other significant events which when recorded in the log, will provide clarification or explanation of site actions or necessary information for systems analyst/maintenance personnel.

7. **GENERAL COMMUNICATIONS CAPABILITIES.** The GEODSS system has both Automatic Digital Network (AUTODIN) and dedicated Advanced Data Communications Control Protocol (ADCCP) communications circuits. The AUTODIN circuit is normally operated at 2400 bps, while the ADCCP circuit is operated at 9600 bps. The AUTODIN circuit provides the GEODSS system with world wide communications and is normally used for general administrative traffic. In contrast is the ADCCP circuit, which is a direct line to the NORAD communications segment. The line is primarily used to pass high speed operational traffic in both directions. Observational data, SOI signatures, and launch alert messages are typically passed on this line. Through proper header block indicators, the ADCCP line may also be used to pass administrative traffic by directing the data to be passed to the AUTOVON circuits through the NORAD communications segment C-file mechanism. The C-files are a record file containing a fixed set of addresses with the appropriate AUTODIN routing indicators. This capability allows an ADCCP user to pass data outside of the NORAD complex. Although the C-files provide a broad spectrum of addressees,

(5) Annotation of the scheduled track times.

(6) An area for inclusion of remarks which may clarify or expand upon tasking requirements, special instructions, etc.

c. NFL Worksheets. NFL Worksheets provide the console operator with the pertinent information he requires to fulfill tasking requirements and to annotate actual track times and numbers of observations collected. It generally includes an area for entering explanatory comments.

d. New Domestic Launch (NDL) Worksheets. Notification of an impending domestic launch is normally provided to the sites from the SSC if tracking support is anticipated. Since the launch is known prior to actual lift-off, more precise information concerning the nominal orbit is known. The NDL worksheet provides the console operator and supervisory personnel with the data pertinent to a projected or known domestic launch. This data includes the number, name, launch site, launch window, element set and space for recording site activities.

e. SOI Worksheets. The primary SOI worksheets that would typically be seen at a site include the SOI tasking schedule which lists all objects received on the Mission and Payload Assessment (MPA) tasking message from the SOIC and a daily worksheet for controlling and recording SOI data collection activities. The daily worksheet provides the console operator with pertinent information for SOI tasks for that night, and typically provides an area for comments that may be useful to the SOI technician and supervisory personnel. The results of daily tasking are generally annotated on the MPA worksheet so that the results of mission operations versus monthly tasking requirements can be easily discerned. The MPA worksheet is used by the SOI technician in determining the objects that are to be included in the following night's mission.

f. Special Projects. On occasion the site will receive special tasking, such as broad area searches. In many instances these projects will include checklists and procedures peculiar to the project and will normally provide the console operator with specific information for accomplishing the task.

g. UCT Worksheet. UCT worksheets provide the operator with the means for recording actions taken during UCT operations. Typically the data recorded will include the UCT number, date and times of track, azimuth and elevation, and the number of observations collected. This information can be useful to the operator in determining when to perform the Initial Orbit Determination (IOD) process. Giving the telescope a pol/dec coordinate can help recover a satellite if the process of dead reckoning the satellite's position from track-to-track results in loss of the object.

h. DSSTRR Worksheet. The Deep Space Sensor Tasking Response Report (DSSTRR) is a product of both computer generated data and manual inputs. A DSSTRR worksheet is used to facilitate recording of the data manually input into the report. The worksheet provides space for entering site weather status by time, recording system hardware or software outages, computing system availability and recording the number of tracks attempted and acquired versus tasking requirements.

b. Nighttime Activities.

- (1) Crew change briefing and discussion of special tasking, equipment status and instructions to the crew.
- (2) Preoperational checks of the system to ensure it is ready for the mission, including computers, mounts, telescopes, cameras and consoles.
- (3) Calibration of the camera and radiometer system.
- (4) Execution of the routine mission schedule.
- (5) Real time tasking updates and mission scheduling of high priority tasking that arrives during normal mission operations.
- (6) Collection of radiometric data and transmission of high priority data to the Space Operations Intelligence Center (SOIC).
- (7) Post mission system shutdown, file maintenance and administrative tasks such as completing the operations logs and worksheets.

6. OPERATIONS CHECKLISTS. Virtually all critical mission functions are controlled through a series of checklists and logs that provide operations personnel with guidance on infrequently performed tasks and a structured outline for ensuring daily functions required for performing the mission are accomplished. Typically these checklists will minimally cover the following areas:

a. Operations Daily Checklist. This checklist provides operations personnel with an ordered sequence of events that ensures all necessary mission functions are performed. They provide a positive indication of what activities have been completed, thus aiding in a smooth transition between operational crews.

b. New Foreign Launch Checklists. In the event notification is received that a new foreign launch (NFL) has occurred, the NFL checklist provides an ordered sequence for ensuring all tasking requirements are fulfilled. Some common areas normally appearing on these checklists are:

- (1) Verification of tasking, including priority, category, and tracking requirements.
- (2) Verification that nominal folders were updated.
- (3) Verification that look angle data was generated to determine the visibility parameters of the object.
- (4) Verification the object(s) was entered in the tasking file.

(8) Search. Multiple patterns are embedded in the software for searching a volume of space around a satellite's position or conducting an "area" search in a designated region of the sky. These patterns can be commanded from the software or by manually selecting the search function.

5. GENERAL OPERATIONS FUNCTIONS. Operated on a 24-hour-per-day, 7-day-per-week basis, operation of the sites include both daytime and nighttime functions which, although distinctly different, complement each other in achieving the overall mission goals of the system. The primary data products of the sites are positional measurement data and space object identification (SOI) signature data. The general flow of operational activities for daytime and nighttime activities are summarized below.

a. Daytime.

- (1) Configuration of the system in a daytime communications and maintenance mode.
- (2) Review of the previous night's mission to ensure compliance with tasking requirements, including both routine and special tasking such as new foreign or domestic launches.
- (3) Report generation for the previous night's activities.
- (4) Evaluation of system performance to determine if there are corrective maintenance actions that must be performed.
- (5) Evaluation of any radiometric data collected during the previous mission and SIGTRANS transmitted as required.
- (6) Storage of SOI data for historical purposes.
- (7) Review of NORAD tasking requirements for the next mission to determine if tasking file maintenance must be performed prior to mission scheduling.
- (8) Performance of data base maintenance activities to ensure all mission files conform with current NORAD/Space Command directives.
- (9) Software maintenance and development, as required.
- (10) Communications system administrative activities such as message distribution, filing, message generation, message receipt and logging.
- (11) Generation of the next mission schedule.
- (12) Generation of the record files necessary for conduct of the mission. These files include listing of the rise/set file (CURISE) that provides the visibility parameters for each tasked satellite, listing of the status of the current element set file (ELSUM), consolidated listing of tasking (TSKSUM) and the summary listing of the entire mission requirements (CUPERF).

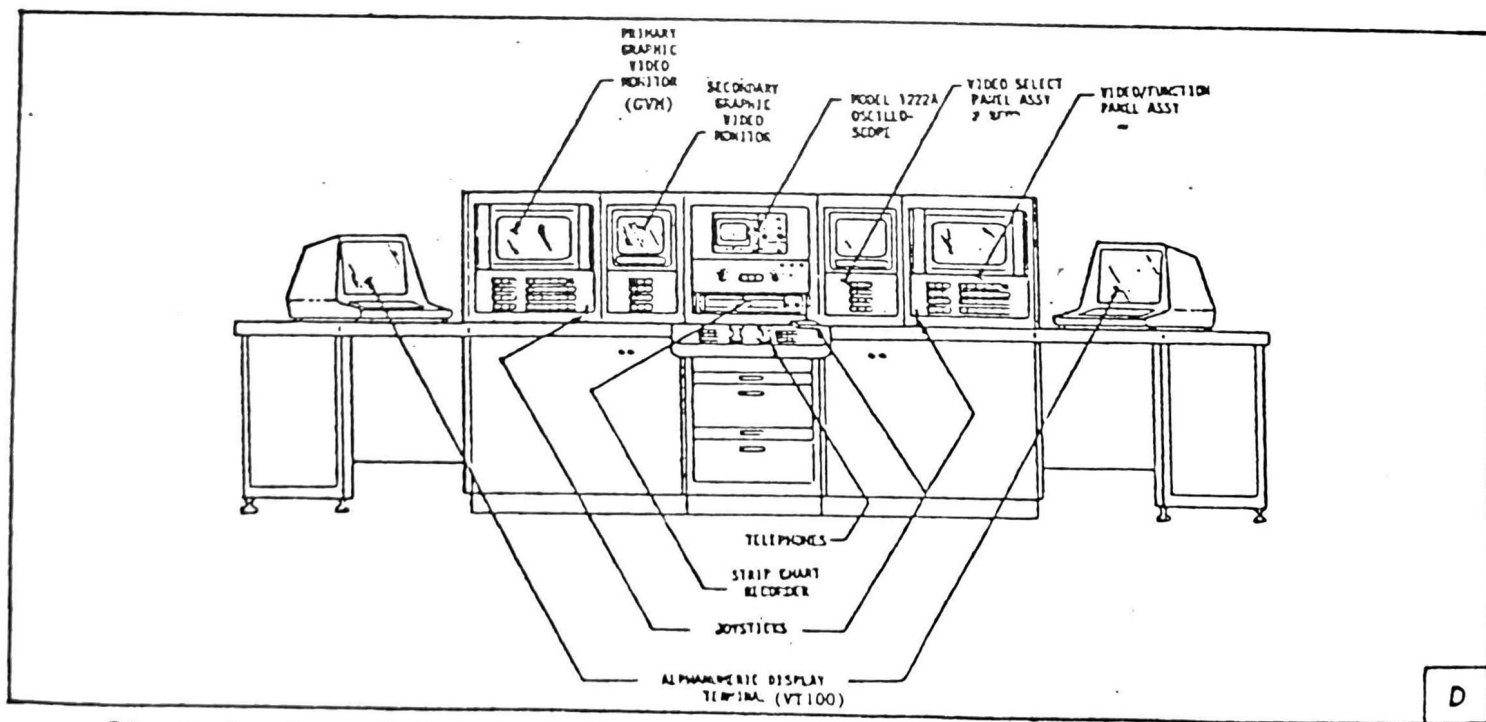


Figure 4 General Data Flow (Continued)

DOME STRUCTURE

- OFF THE SHELF HARDWARE DESIGN
- LOW COST
- LOW MAINTENANCE
- WEATHER SUBSYSTEM SPECIFICATIONS

THERMAL SYSTEM

- STANDARD HARDWARE OFF SHELF
- WEATHER SYSTEM SPECIFICATION
- PROVEN DESIGN
- REDUNDANT BACKUP SYSTEM

WEATHER SYSTEM

- STANDARD HARDWARE
- WEATHER SYSTEM SPECIFICATION
- LOW COST
- ETS PROVEN DESIGN
- COMBINE DATA DISPLAY SECTION

MAIN TELESCOPE

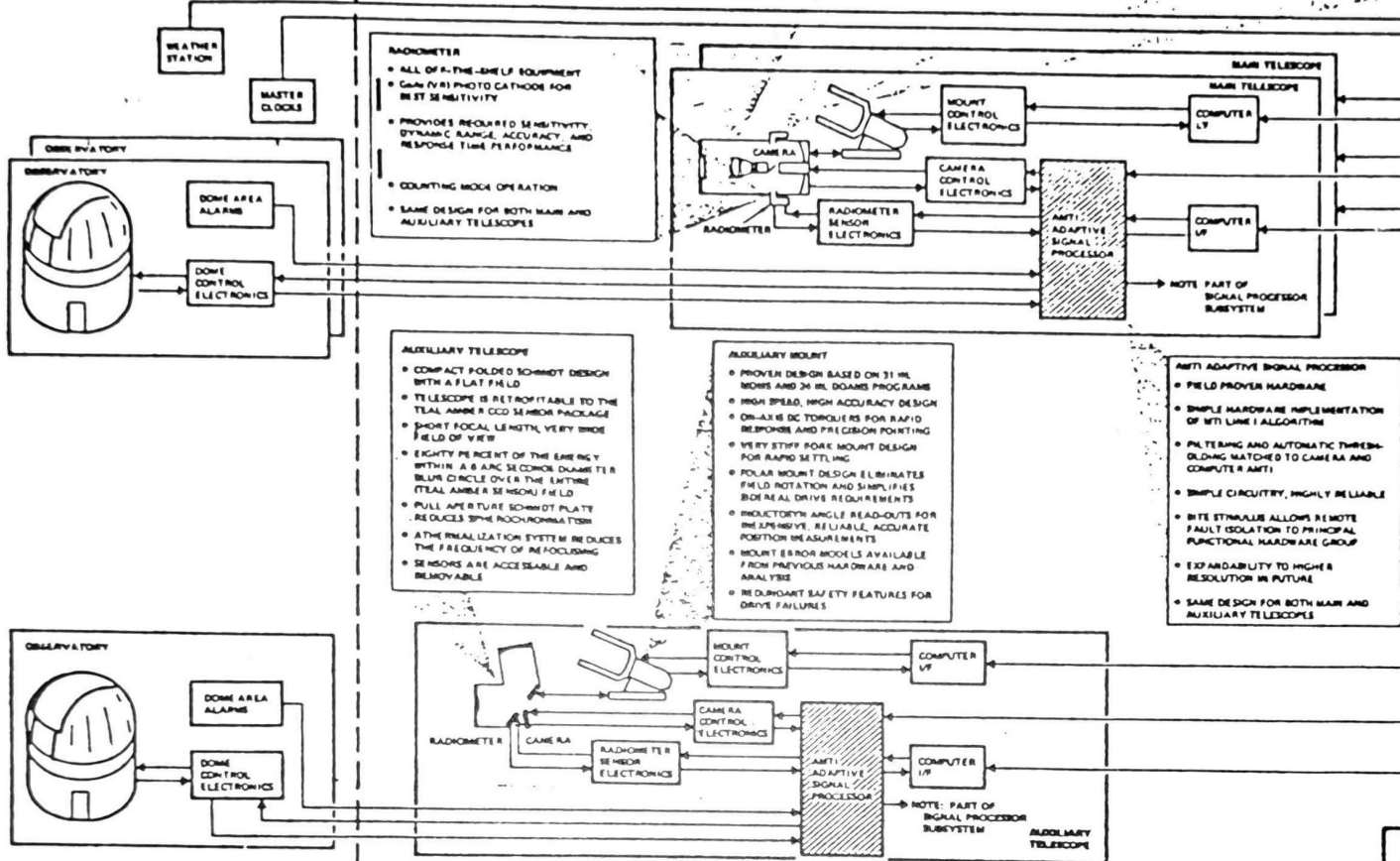
- SIMPLE EXTRAPOLATION OF EYE DESIGN WITH IMPROVED PERFORMANCE (LARGE FIELD OF VIEW)
- OPTICAL PERFORMANCE VERIFIED BY COMPLETE RAY TRACE ANALYSIS
- BLUR CIRCLE LESS THAN 2.5 ARC SECONDS OVER 21 DEGREE FLAT FIELD OF VIEW
- LIGHTWEIGHT, LOW MOMENT OF INERTIA DESIGN AXIALLY FOLDED
- SHUTTERS SHIELD FOCAL PLANE FROM STRAY LIGHT
- REFOCUSING ARE ACCESSIBLE AND EASILY REMOVABLE
- SINGLE OPTICAL SYSTEM WITH BEAM SPLITTER ALLOWS TRACKING WITH THE CAMERA WHILE USING THE RCH SENSOR
- FOCUSING DRIVE SIMULTANEOUSLY FOCUSES THE CAMERA AND RCH SENSOR
- ATHERMALIZATION SYSTEM REDUCES THE FREQUENCY OF REFOCUSING

CAMERA

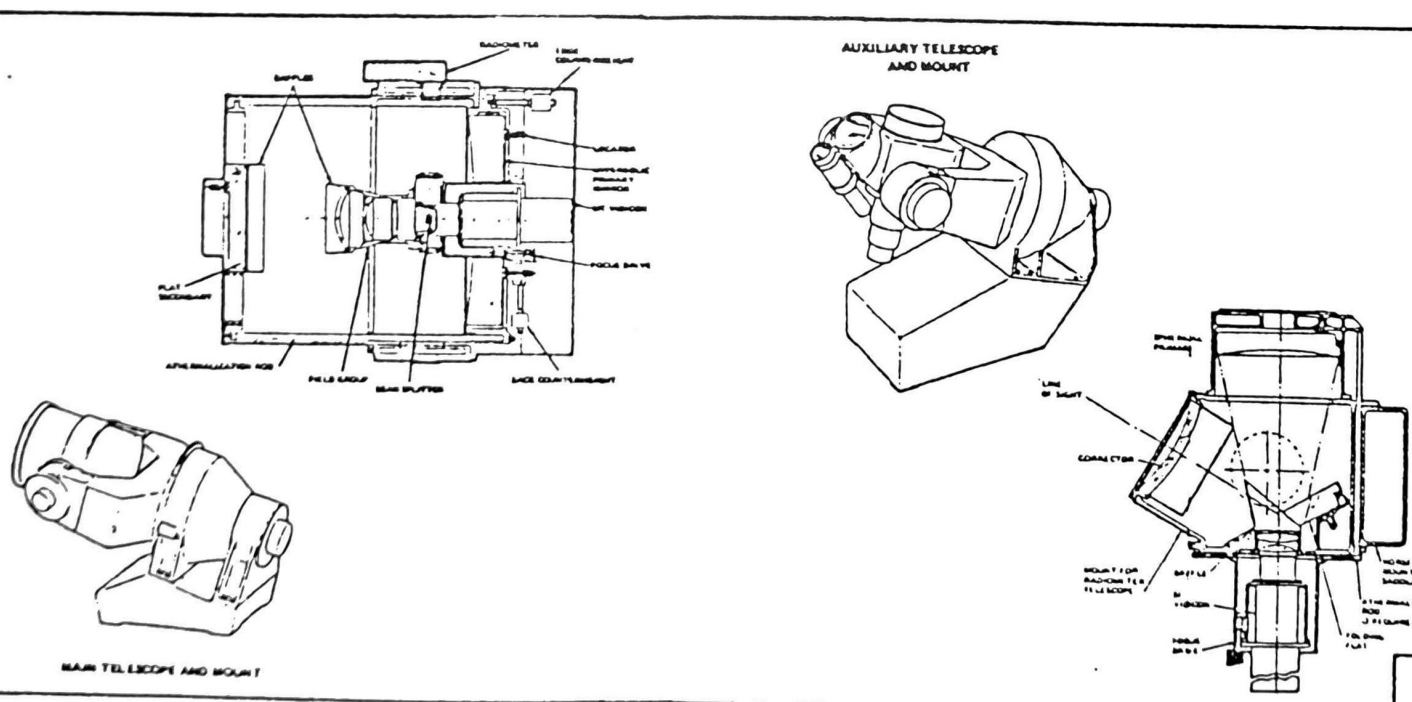
- FIELD PROVEN DESIGN
- HIGHEST PERFORMANCE CAPABILITY USING OFF THE SHELF HARDWARE
- FULLY INTERCHANGEABLE ON ALL TELESCOPES
- FULLY COMPUTER CONTROLLED OPERATION
- FLEXIBLE EXPOSE/READ ALLOWING SYSTEM PERFORMANCE OPTIMIZATION FOR MISSION
- 2:1 ZOOM PROVIDES MAXIMUM SEARCH RATE ADAPTABILITY
- OPTICAL RESOLUTION FOR RAMP ACCURATE METRIC CALIBRATION

MAIN MOUNT

- HIGH SPEED, HIGH ACCURACY DESIGN
- ON-AXIS BE TROUVER FOR RAMP RESPONSE AND PRECISION POINTING
- VERY STIFF POLE MOUNT DESIGN FOR RAMP SETTLING
- POLAR MOUNT DESIGN ELIMINATES FIELD ROTATION AND SIMPLIFIES RCH FIELD DRIVE REQUIREMENTS
- INDUCTION ANGLE READ-OUTS FOR INSPECTION, RELIABLE, ACCURATE POSITION MEASUREMENTS
- PROVEN DESIGN BASED ON 21 IN RCHS AND 24 IN DOAMS PROGRAMS
- MOUNT ERROR MODELS AVAILABLE FROM PREVIOUS HARDWARE AND ANALYSIS
- REDUNDANT SAFETY FEATURES FOR DRIVE FAILURES



A



B

Figure 1. General Overview

CONSOLE

Number per site.....	2
CRTs.....	2 per console station 2 console stations per console
Function keys.....	48 per console station
Other devices.....	2 strip chart recorders 1 per console 1 joystick per console station A-scopes and alphanumeric terminals
Size.....	160x48x56 inches
Manufacturer.....	TRW

PERFORMANCE SPECIFICATIONSDETECTION PERFORMANCE

Maximum detections.....	0-10 per FOV
Probability of detection.....	0.95
False alarm rate.....	1 per 20 FOV

SPACE OBJECT IDENTIFICATION PERFORMANCE

Signal-to-noise ratio.....	7.72 for 1 second intergration
Visual magnitude calculation.....	+0.125

TRACKING PERFORMANCE

Angle accuracy.....	+10 arcseconds, 30
Time per track.....	1 minute
Timing accuracy.....	+1 millisecond

SEARCH PERFORMANCE

All telescopes.....	35,000 square degrees/hour maximum
Main telescopes.....	all speed search - 2400 square degrees/hour
Auxiliary telescope.....	all speed search - 5000, 15000 square degrees/hour

Figure 3. GEODSS Specifications (Continued)

CAMERA ELECTRONICS

Number per site.....3
 Scan lines.....832 (Slow scan)
 Sampling rate.....832 samples per camera line
 Scan rate.....0.3, 0.6 seconds
 Bandwidth.....0.75, 1.5, and 7.5 MHz

COMPUTERS

Number per site.....4
 Type.....PDP 11/70
 Manufacturer.....Digital Equipment Corporation

SOFTWARE

Machine language instructions.....greater than 400,000
 Modification developers.....RCA, Kentron Int. Inc.
 Original developer.....TRW

RADIOMETER TUBE

Number per site.....3
 Type.....Photomultiplier
 Tube diameter.....2 inches
 Responsivity.....1.025 amp/lumen
 Photocathode area.....4 x 10 mm
 Current gain..... 10^6
 Manufacturer.....RCA

RADIOMETER ELECTRONICS

Number per site.....3
 Timing interval.....1 millisecond
 Manufacturer.....Itek

VIDEO PROCESSOR

Number per site.....3
 Sampling rate.....832 samples per camera line
 Manufacturer.....Itek

Figure 3. GEODSS Specifications (Continued)

GEODSS SPECIFICATIONS

DOME

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Number per site.....3
Diameter.....20 feet
Weight.....5000 pounds
Manufacturer.....Observadome

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MAIN TELESCOPE

Number per site (Sites 1, 2, and 3).....	2
Number per site (Sites 4 and 5).....	3
Focal length.....	86 inches
Clear aperture.....	40 inches
Field of View (FOV).....	2.1 degrees
Blur circle.....	2 arc seconds
Weight.....	3200 pounds
Manufacturer.....	Contraves Goerz

AUXILIARY TELESCOPE

Number per site (Sites 1, 2, and 3 only).....	1
Focal length.....	30 inches
Clear aperture.....	15 inches
FOV.....	.6 degrees
Blur circle.....	.6 arc seconds
Weight.....	2400 pounds
Manufacturer.....	Contraves Goerz

TELESCOPE MOUNT

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Number per site.....3
Tracking accuracy.....MAIN: 1.5 arc seconds
                        AUX: 10 arc seconds
Maximum slew rate.....15 degrees/second
Weight.....12000 pounds
Manufacturer.....Contraves Goerz

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CAMERA TUBE

Number per site.....	3
Type.....	Vidicon
Photocathode.....	Type S-20
Photocathode diameter.....	80 mm
Target diameter.....	32 mm
Average resolution.....	625 elements per diagonal
Electric zoom range.....	2:1
Responsivity.....	2.851 K light
Manufacturer.....	RCA, Westinghouse

Figure 3. GEODSS Specifications

DET 4, DIEGO GARCIA, INDIAN OCEAN GEODSS

MISSION: TO TRACK DEEP SPACE OBJECTS, LIMITED NEAR EARTH TRACKING (250-350 MILES)

HISTORY: DESIGNED TO REPLACE BAKER NUNN SYSTEM, PART OF A CHAIN OF 5 GEODSS SITES, THIS SITE HAS 3 MAIN TELESCOPES VERSUS 2 MAIN AND ONE AUXILIARY, 10C JAN 89, OPERATED BY CIVILIAN CONTRACTOR (PRC)

POWER: PRIMARY - COMMERCIAL
SECONDARY - ONE 640 KW DIESEL GENERATOR

UPGRADES: RAMTEK (VISUAL DISPLAY COMPUTER) BEING UPDATED
MEMORY BOARDS BEING INSTALLED TO EXPAND MEMORY CAPACITY
GPS RECEIVER TO IMPROVE TIMING, ENTRY LOBBY FACELIFT

FUNDING: \$7 MILLION, FOR THE FOUR SITE CHAIN: SOCORRO, MAUI, DIEGO GARCIA, CHOE JONG SAN

ADVANTAGES: INEXPENSIVE TO OPERATE, VERY ACCURATE DATA PRODUCED, FAIRLY AUTOMATIC SYSTEM, EXCELLENT CATALOG MAINTENANCE MAINTENANCE, PASSIVE SYSTEM

LIMITATIONS: NIGHT OPERATIONS ONLY, VERY LIMITED DAYLIGHT OPERATIONS (BEING STUDIED)
OPERATIONS HINDERED BY WEATHER CONDITIONS, CONTINUOUS RUST PREVENTION PROGRAMS AND EFFORTS, FULL MOON EFFECT

Russians Believed Deploying Comsat Net

By Philip J. Klass

Washington—Soviet Union is believed to be deploying a low-altitude communication satellite system for domestic long-range civil and military service to bolster the vulnerable high-frequency (HF) radio on which it now depends for long-distance communications.

This conclusion is based on the recently accelerated pace of Soviet launches of clusters of five Cosmos satellites from a single booster into near-circular, low-altitude orbits. Since July 16, the Russians have placed 15 satellites into orbits whose characteristics strongly indicate they are part of a space communications system.

U.S. government officials conclude from these Cosmos launches that the Soviets are deploying an operational system of some type, with communications, navigation and weather surveillance the most logical choices.

Several factors, including the numbers of such satellites being accumulated in orbit, point to a system intended for domestic long-range communications. While the orbital altitude of approximately 1,000 mi. is lower than desired for global communication service, it is adequate for domestic use and reduces the risk of eavesdropping by stations outside the Soviet Union. It also permits the use of smaller, less expensive ground terminals.

Only two weeks ago, Soviet Premier Alexei Kosygin, speaking to the Communist Party Plenum, said: "Wide possibilities are open for the use of satellites and rockets for the improvement of communications, weather forecasting and navigation."

Submarine Fleet

The Russians could put satellites to good use in all three fields. With a large fleet of submarines, including a growing number of nuclear-powered missile-launching subs, the Russians need an accurate global navigation system. It would not be surprising, therefore, if they followed the lead of the U.S. Navy, which developed the Transit navigation satellite for use by Polaris submarines.

Soviet scientists attending international conferences several years ago expressed interest in the U.S. Tiros weather satellites. The importance of weather forecasting to agriculture and persistent Russian problems in raising enough food could explain this interest. With vast, sparsely-populated areas in the Soviet Union, a weather satellite would be especially useful.

The benefit to Russian communications from a satellite system would be chiefly reliability. The Soviets' HF radio is subject to frequent outages caused by the atmosphere, and is vulnerable to jamming. Rising tensions between the USSR and Communist China are cer-

tain to emphasize present limitations in long-range military communications and generate pressure for a space system.

Circular orbits are desirable for all three of these functions, and a relatively low-altitude orbit is optimum for a navigation or weather satellite. The U.S. Tiros weather satellites normally are placed in orbit at altitudes of approximately 500 mi., as are the Navy's Transit navigation satellites. However, a communication satellite, intended for intercontinental service, should have an altitude of at least 5,000 mi.

Cosmos Clusters

The last two clusters of Cosmos satellites, launched on Sept. 3 and Sept. 18, are at an altitude of approximately 1,000 mi., and an inclination of 56 deg.

While their low altitudes might indicate that they are intended for navigation or weather surveillance, the 56-deg. inclination would prove a handicap for both functions. At this inclination the satellites do not pass over the northern half of the Soviet Union or the earth, leaving an important coverage gap. For the same reason, Soviet submarines would not be able to use the satellites for navigation in the polar regions, above perhaps 70 deg. latitude.

This points to the possibility of a space communication system, especially since a large number of satellites are

not needed at one time for weather surveillance or navigation. But a large collection of satellites is extremely useful if they are intended for communications and at very low altitude.

For example, at the 1,000-mi. altitude of the clustered Cosmos satellites, a total of approximately 150 would be needed in randomly spaced orbits to give continuous service between two ground stations that are 2,000 mi. apart. At a higher altitude the number would drop sharply.

If the Soviets continue to launch clusters of Cosmos satellites into similar orbits during the coming months and years, it will provide increasing support for the view that the system is intended for communications. But it also is possible that a cluster may include a navigation satellite or a weather satellite.

Present System

The present operational system dates to the first Soviet multiple satellite launch of three spacecraft (Cosmos 38-40) on Aug. 18, 1964. The three were placed in elliptical orbits with apogees of 412-437 mi., and an inclination of 56 deg. Beginning early this year the program pace accelerated, as shown below:

- Feb. 21: Three satellites (Cosmos 54-56) launched by a single booster into elliptical orbit with an apogee of approximately 1,000 mi. at a 56-deg. inclination.
- Mar. 14: Three satellites (Cosmos 61-63) launched into orbit almost identical to the preceding shot.
- Apr. 23: Molniya 1 communication satellite launched into a highly elliptical orbit with an apogee of approximately 25,000 mi. at an inclination of 65 deg. This was first Soviet communication satellite to be announced.
- July 16: Five satellites (Cosmos 71-75) launched by a single booster into nearly circular orbits with apogees ranging from 338-401 mi., at a 56-deg. inclination.
- Sept. 3: Second cluster of five satellites (Cosmos 80-84) placed into near-circular orbits at higher altitude with apogees ranging from 950-983 mi., also at a 56-deg. inclination.
- Sept. 18: Third cluster of five satellites (Cosmos 86-90) launched into orbits similar to Cosmos 80-84, with apogees ranging from 1,030-1,050 mi. and at a 56-deg. inclination.

The Russians announced that one satellite in each of the last two Cosmos clusters was equipped with a Snap 1-type of nuclear power source, suggesting that the spacecraft are intended to achieve a relatively long operating lifetime.

Luna 7 Launched

Washington—Soviet Luna 7 launched toward the moon Oct. 4 was the third attempt at a lunar surface probe this year and the seventh announced by the Russians, although U.S. space officials have a longer list (see p. 32).

Luna 7 weighed 3,318 lb., 80 lb. more than Luna 6 (AW&ST June 14, p. 87).

U.S. observers said the soft-landing system reported on the flight probably was an improved version of the one used unsuccessfully by Luna 5, which was destroyed on impact May 12 (AW&ST May 17, p. 36).

Though Carl Sagan was an extreme skeptic about everything from the face on Mars, UFO abductions, ESP, and life after death (may he rest in peace), he helped further our exploration of the universe. I was raised to believe that when we die, one of our rewards is to have all our questions answered and to finally know the truth to everything.

Is the alien folklore true ?

From my beliefs I guess Carl finally knows !

May he rest in peace

Here is the CNN article on his death:

NEW YORK (CNN) -- Astronomer Carl Edward Sagan, a gifted storyteller who extolled and explored the grandeur and mystery of the universe in lectures, books and an acclaimed TV series, died Friday after a two-year battle with bone marrow disease. He was 62. Sagan died of pneumonia at the Fred Hutchinson Cancer Research Center in Seattle, where he had a bone-marrow transplant in April 1995, a center spokeswoman said. The center had identified his disease as myelodysplasia, a form of anemia also known as preleukemia syndrome.

Born in New York City in 1934, Sagan was a noted astronomer whose lifelong passion was searching for intelligent life in the cosmos.

"The significance of a finding that there are other beings who share this universe with us would be absolutely phenomenal, it would be an epochal event in human history," Sagan once said.

Sagan began researching the origins of life in the 1950s and went on to play a leading role in every major U.S. spacecraft expedition to the planets.

"We have looked close-up at dozens of new worlds. Worlds we never saw before. And unless we are so stupid to destroy ourselves, we are going to be moving out to space in the next century," he said. "And if I'm fortunate enough to have played a part in the first preliminary reconnaissance in the solar system, that's a terrifically exciting thing."

"We have swept through all of the planets in the solar system, from Mercury to Neptune, in a historic 20 (to) 30 year age of spacecraft discovery," Sagan once said.

Sagan made his mark early with research showing that Venus is scorching hot and Mars is a cold desert. Among his many gifts was the ability to communicate his knowledge about the cosmos.

"Are we an exceptionally unlikely accident or is the universe brimming over with intelligence? (It's) a vital question for understanding ourselves and our history," Sagan said.

Radio telescopes listening for signs of life in the billions of stars and galaxies, as part of a program close to Sagan's heart, have so far received no response.

"It says something about the rarity and preciousness of life on this planet," he said. "The flip side of not finding life on another planet is appreciating life on Earth."

Outside his research, Sagan also hosted a popular television series on PBS called "Cosmos." He published hundreds of scientific papers; wrote eight books, including the Pulitzer Prize winning "The Dragons of Eden"; and was a professor of astronomy at Cornell University in Ithaca, New York.

Sagan came close to death twice after being diagnosed with blood disease in 1994. Bone marrow donated by his sister, along with chemotherapy, put his cancer in remission.

Speaking at a conference after that episode, he said, "I'd like to begin with a personal remark. I've been in Seattle for the past months, fighting a life-threatening illness which it looks as if I've surmounted."

Despite his battle with cancer, Sagan continued his dream of going to the stars.

"The job is by no means done," he said. "We will look for the boundary between the solar system and the interstellar medium and then we'll voyage on forever in the dark between the stars."

Email Comments to [UFO Folklore !](#)

This was sent in from Steven J. Powell
Thanxz Steve

UFO's and Mainstream Science

by Bernhard Haisch, Ph. D.

[Bernhard Haisch is the Managing Editor of the Journal of Scientific Exploration, P.O. Box 5848, Stanford, CA 94309.

'The Journal of Scientific Exploration' (JSE), which I edit, is a peer-reviewed research journal in which scholarly investigations on phenomena not part of the currently accepted scientific paradigms may be published. UFO's fall in this category, or more to the point, UFO's certainly fall outside the realm of mainstream science. Is there any possibility of changing this situation? The purpose of this essay is to present some ideas along these lines to the community of UFO investigators and supporters.

By way of introduction I am not myself a UFO researcher, but as editor of this unconventional journal I have been exposed to enough data and met enough serious investigators to become supportive of the need to carefully study whatever this phenomenon, or perhaps phenomena, may be. My profession is that of astronomer and by most criteria, apart from editing JSE, I am an insider in the scientific mainstream: author of research papers, principle investigator on NASA projects, associate editor of a leading journal in astrophysics.

The field of astronomy is supported by hundreds of millions of dollars in government research funding every year, billions if one tallies such major missions as the Hubble Space Telescope. For the recent meeting of the American Astronomical Society in San Antonio, the head of NASA, Daniel Goldin, flew down from Washington just to address us astronomers. Is there any chance that even a fraction of such support and respectability could ever come to ufology?

At the moment, no, not a chance. But as I was listening to Mr. Goldin speaking it occurred to me that some of the points he was making might be worth passing on.

Goldin made it clear that NASA's job is not to support astronomers (although it does that pretty abundantly, a situation I greatly appreciate!). Nor is NASA's job to employ engineers and astronauts to keep the shuttle flying. NASA's job, said Goldin, is to serve the American people. He mentioned a talk he had given in Bozeman and the excitement that the Hubble pictures elicited there among the ordinary men and women of Montana, far removed from NASA centers. People want to know about the universe. And people especially want to know whether there are other worlds capable of sustaining life. The fact that the announcement at the same astronomical society meeting of the discovery of two new planets orbiting the stars 70 Virginis and 47 Ursae Majoris made the front pages of major newspapers underscores this point.

The search for the origins of life and for other planetary systems is now a cornerstone objective for NASA. Goldin discussed visionary plans to image other solar systems using huge space-based interferometers in the new millennium. He challenged us astronomers to find ways to photograph clouds and mountains on earth-like planets in other solar systems, which must be one of the most scientifically ambitious statements ever made by a head of NASA. This, in his view, is what the American people want from NASA; and I have no doubt that he is correct in his assessment. I pose to you that there is a lesson here for ufology. If various public opinion polls are to be believed there may be more Americans who believe there is something going on having to do with UFO's than not. It even seems probable, though I do not know this to be the case, that there are more people who "believe in" UFO's than have heard about Hubble. If that is the case, Goldin's lesson for NASA would apply here too. If the American people truly want the UFO problem officially investigated, the government will do that by and by. That does not

automatically mean NASA of course. Many appearances to the contrary, UFO's may have nothing to do with outer space as astronomers view the universe.

How would one bring about government-sponsored research analogous to that of astronomy or the other sciences. As Goldin urged us to do on behalf of NASA's research: write, call, visit your representatives and senators. Constituencies count. No doubt about it. NASA funds astronomical research because the American people want this; even if most of it is too esoteric for public consumption, the highlights such as Hubble images and first extra-solar planets do make the newspapers and people read with interest about what their tax dollars are paying for.

But there is a second key ingredient that really needs to come first, and all the grassroots lobbying will come to naught until this second point that Goldin made to us astronomers is translated into action in the wilds of ufology. Given a mandate to support such research, who decides what exactly will be done. Goldin reminded us astronomers that it is our responsibility to come up with NASA's marching orders for the start of a new century. The community of astronomers must reach consensus on prioritizing projects, and he made it clear that those of us whose projects may not make the cutoff, owing to fiscal limitations, are still obligated as members of the research community to support those that are selected. Community consensus and support of an agreed-upon plan, even by those who lost in the proposal competitions, is essential. Without that, the money would eventually stop flowing.

And there is the roadblock for ufology. There, in my view, is the principal reason civilian government money has never started flowing, or even trickling. The field is as far from consensus as it could be. There are many possible factors in this ranging from sincere and professionally motivated difference of opinion, to lack of understanding of scientific methods, focus on personal aggrandizement rather than objectivity, paranoia, etc. To be fair to the principles of objectivity and comprehensiveness one must also acknowledge the possibility that the disarray of ufology may be partially driven by official or semi-official disinformation, or even, taking the view of the respected researcher Jacques Vallee, by the UFO phenomenon itself.

But even if those darker possibilities were true, it would still be possible to press ahead if a leadership and a position could be agreed upon, at least a tentative one, a provisional one to get started, one that can be re-evaluated after things get going. One has a better chance of arriving at a destination even if one drives the car in the wrong direction and has to turn around, than if no one is ever selected to start the car and pull out the driveway!

Lest I leave the wrong impression, this is not a solicitation for anyone's vote for this astronomer to lead the charge. I have no desire to become a ufology leader, nor am I here to recommend to you in whom such leadership should be vested. My message is a simple but absolutely realistic one as evidenced by Mr. Goldin's address. Astronomy is doing reasonably well even in today's budget climate because it is meeting a demonstrable desire of the American public and has the professional structure, stature and behavior to effectively translate that mandate into funded programs.

The public climate is in fact more and more receptive to new ideas and is certainly keenly interested in the possibility of other intelligent life in the universe, including the possibility of evidence for such right here under our noses. It is conceivable that this could be turned into a public mandate for government-sponsored UFO research. But that can only happen if ufologists can somehow follow the successful example of the astronomical community.

This is difficult. Ph. D.'s in ufology are not conferred by respected institutions as they are in astrophysics. But there are things that can be done to start the process. Genuinely scholarly papers can be written, which the Journal of Scientific Exploration would consider, for example. Note that I am not trying to solicit papers; the Journal is highly selective and turns down more articles than are accepted. Journal

questionnaires 1356 were returned. In response to whether the UFO problem
1 of 4
1 replies were: 23% certainly, 30% probably, 27% percent possibly, 17% probably not, 3% certainly not.
Interestingly, there was a positive correlation between the amount of reading done on the subject and the
opinion that further study was in order. Professional researchers would be likely to lose interest if there
were a complete lack of credible data. This shows a surprisingly high level of potential interest that could
be brought into the open if a proper professional structure could be provided. Scientists value their
reputations more than anything, and the perceived danger of tainting one's hard won reputation by
association with a disreputable activity is a major obstacle.

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There is also a kind of non-linear downward spiral. Scientists are both very busy and put off by the
appearance of much of ufology. As a result most scientists never look at UFO evidence, which leads to
their conclusion that there is no evidence. Given the proper environment this could presumably be turned
into a favorable upward non-linearity: Given "evidence of evidence," credibly, soberly presented, the
interest of scientists can be piqued, which would presumably lead to the "discovery" by scientists that there
is evidence.

Two other obstacles are irrationality and paranoid claims. One cannot avoid the possibility that, as Vallee
argues, the element of irrationality may be the actual key and purpose of the phenomenon so as to force a
change in human consciousness. This would not be welcome news for the apparently large constituency of
nuts-and-bolts saucer enthusiasts, nor presumably for those who take all abduction reports at face value.
And this would be very difficult for science to deal with because it is at first glance a frontal assault on
science itself.

But consider the advent of quantum mechanics and relativity in the early 1900's. These were frontal
assaults on the prevailing classical physics that must have looked like madness to many physicists of the
day. We do not read about them of course. The textbooks discuss the Einsteins and Plancks and other
geniuses who prevailed, not the army of "ordinary physicists" whose careers and world-views looked to be
shattered by what must have seemed irrational to them. But life went on and science even advanced!

Scientists are also certainly not used to the possibility that a phenomenon under investigation may be
subject to clandestine manipulation. This may be the greatest obstacle because of the, in my view, small
possibility that there may be some truth to it. It is not hard to imagine that there may be a great deal of
classified information, but that would not by itself imply any greater comprehension concerning the nature
of the phenomenon by those holding - and withholding the data. The 'Journal of Scientific Exploration' is
publishing formerly classified information concerning multi-million dollar remote viewing (ESP) programs
funded by the CIA and other intelligence agencies over the past 20 years. Projects that were highly secret a
decade or two ago are now a matter of public record. n

This demonstrates two things directly analogous to the UFO situation: yes, there really were classified ESP
programs as claimed; but no, the vaunted government agencies were not able to come to deeper
conclusions regarding the nature of that phenomenon than was then or is now publicly available. (The two
public reports - by Utts and by Hyman - on this 20-year effort disagree on the strength of the evidence for
remote viewing. The view of the three leading figures in this program, Puthoff, Targ and May, with all of
whom I have had in- depth discussions, is that there were astonishing successes in a fraction of the cases.
Unfortunately there was no way to distinguish in advance what would be signal from what would be noise,
hence the program could not achieve its required operational intelligence potential.)

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Only in the unlikely circumstance that the most paranoid vision of government conspiracy with non-earthly intelligences should prove to be true would the existence of classified programs obstruct a successful, open, funded research initiative-either by blocking outright the establishment of an open research program, or by turning it into a sham to further cover "the top secret truth." In any case, nothing would be gained by letting suspicions of this sort stop the attempt to establish an open research program. Indeed, such efforts would perhaps point to valuable indicators of opposition, if such there were.

It seems from my unique vantage point as both scientist and editor of JSE, that substantial evidence exists of "something going on." But in the real world of competition and politics and entrenched positions that by itself will not move the UFO debate off square one. Evidence needs to be properly analyzed and then properly presented using techniques and venues as close as possible to those of mainstream science. The disparity of the evidence appears to be confusing enough without layers of unproven theory and conspiracy. Somehow out of organization of evidence there could arise not the truth - that is too much - but there could arise a consensus on simply what to do next, who would plan it, who would execute it, how would money be spent in a responsible, accountable, way if made available. The outcome would not be "the answer," but merely and sufficiently the input for the next logical follow-on. If such a scientifically-oriented process could be started, scientists could be attracted: grassroots political lobbying could then point to realistic funding opportunities that a representative or senator would be willing to vote for and tout at the next election as his or her contribution to the legitimate needs and wishes of the public.

Even if the UFO phenomenon should turn out to be deeper than we imagine, even should it prove to transcend science as we know it, the scientific approach is the only feasible way in the real, political, economic, technological world we live in to give us some chance to control our dealings with this phenomenon, rather than letting the phenomenon entirely control us... if such it is.

Email Comments to [UFO Folklore !](#)

From: videodog@aol.com (Video Dog)

June 23, 1995

PRESS RELEASE NASA'S UFO "SPIN DOCTOR" TO TAKE LIE DETECTOR TEST!

James Oberg of Houston, TX, nationally known skeptic for NASA, offers to take a lie detector test. A UFO believer takes him up on his offer.

Joe Thor, a Fresno area businessman, has succeeded in bringing about the first "UFO Debunker lie detector test" ever performed on a government employee. When James Oberg, NASA engineer and "spin doctor", offered to take a lie detector test to prove his honesty representing NASA in matters related to UFO's, Thor requested him to go ahead with the test.

This exchange occurred just recently on the message boards at America OnLine computer network (in the folder "Crashed Saucers", OMNI Magazine Antimatter message boards). Below are the actual messages discussing the arrangements of the test. These were posted over a 10 day period (June 11 to June 20).

Thor (screen name: Video Dog) is presently awaiting Oberg's reply on when he can be available for the test.

Subj: Re:oberg denies everything

Date: 95-06-11 10:22:00 EDT

From: JamesOberg

<> Sigh...Maybe we can open a special folder, "Mud-Wrestling with Oberg", to avoid the distractions of these kinds of ad hominem in special-topic folders. I guess this is what you get from true-believers when you ask too many embarrassing questions. Whenever people have made allegations of my personal dishonesty in the past, I've repeated my offer to take any standard veracity test (the kind whose results they trust when the subject is Travis Walton or somebody like that), at their expense, and I promise to pay if I fail. No takers in twenty years, which is suggestive evidence for their sincerity. As for me appearing as an expert on Roswell on "local TV", I'm at a loss. I don't think I ever have. Is this just yet another fantasized non-fact from some reality-challenged individual, or can they document it's authenticity? I try to restrict what I write to what I can prove (not always meeting my own standards, but hopefully willing to back off when challenged properly), and I'll defend on fact-by-fact case-by-case basis any of those claims, so it should work both ways. Roswell remains a critical underpinning of the UFO world, which means that examining it brutally and discussing it candidly is crucial. BTW, I was in Roswell last week, got some more interesting pictures, to be shared at a later date. So, lay on, McDufu, and cursed be he who first cries, 'Hold, enough!'.

Subj: Re:oberg denies everything

Date: 95-06-11 14:28:34 EDT

From: Video Dog

Mr. Oberg, will you take a lie detector test at my expense? (Of course he won't agree to a test - Mr. Oberg is a paid "spin doctor" for NASA? - he has no respect for the truth.) Now he is saying that he will provide us with some interesting photos concerning Roswell (fat chance!). We are still waiting for the video taken by NASA of the famous "space snake" that astronaut Dr. Musgrave complained about on national TV. (A video Mr. Oberg admitted to us that he had a chance to watch - but couldn't provide us a chance to see for ourselves). A lot of us on this board are very disappointed in Mr. Oberg's failure to provide proof about his claims that the "snake" was ordinary "space debris". Here we had a perfect opportunity for serious

research on an object that Dr. Musgrave "still don't have an answer" for and Mr. Oberg "dropped the ball". That should tell you about his dedication to seek the truth.

Subj: Reply to VideoDog

Date: 95-06-11 18:13:32 EDT

From: JamesOberg.

Subj: Re:Reply to VideoDog

Date: 95-06-14 02:43:49 EDT

From: Video Dog

Take the test Mr. Oberg, (thanks OMNI for paying). I hope that we get to talk to the examiner after.

Subj: Re:Reply to VideoDog

Date: 95-06-14 17:50:22 EDT

From: JamesOberg

There's been a misunderstanding: YOU agreed to pay, I agreed to that, I suggested (I have no fiscal authority to commit extra funding) that OMNI only administer the funds which you will provide. That is, I don't go anywhere until the full budget is in somebody trustworthy's hands. Is your offer to pay still good?

Subj: Re:Reply to VideoDog

Date: 95-06-15 01:52:22 EDT

From: Video Dog

My Mr. Oberg, you protest too much! Ok, I'll pay for the test. But, since I'm paying, I'll pick the examiner (to be mutually agreed upon). Tell us when you can be available and I'll arrange the test down there in your area. Agreed? "BTW, I was in Roswell last week, got some more interesting pictures, to be shared at a later date." How can this be misinterpreted? "Let's let OMNI arrange it, including all expenses." How can this be misinterpreted? You speaking a different language then the rest of us, Mr. Oberg?

Subj: test

Date: 95-06-17 11:36:25 EDT

From: JamesOberg

OK, so let's talk details. What date do we have in mind? What will be the subject of the un-verification attempt (i.e., what is to be disproven about me)? What is the professional standard of the investigator (hot irons on tongue)? Who will hold the expense money (including my own time and travel), paid in advance?

Subj: Mr. Oberg's Lie Detector Test

Date: 95-06-20 16:18:03 EDT

From: VideoDog

OK, here's the details, Mr. Oberg, again (I thought I was specific enough in my last post). Please tell us when you can be available over the next couple of weeks to take the lie detector test (your pick - during the day, in the evening or on a weekend). Give me a couple of available times so it'll be easy for me to set up. Then, I will select an examiner in your area (your pick - Houston, Texas City, League City or Galveston) and let you know in advance who you're going to so you can check out his credentials before your scheduled test date. (The examiner should be an expert in his field - and [hopefully] completely unbiased.) I will pay the examiner, in advance, his usual fee. Now, what questions shall we have the examiner ask you during the test to gauge your truthfulness? I don't want you to be caught off-guard so I propose that we (meaning anybody who is observing the exchange between us) all agree on the questions. (Since I'm paying, I will float the questions to this forum and you and the others can shoot them down if you feel that they are not acceptable.) You'll go into the examination knowing all the questions to be asked (am I making it too easy for you?). A sample question might be: "Mr. Oberg, do you know of ANY instance where NASA covered up or withheld information relating to NASA's contact with E.T.'s anytime in the past or present? Now about your expense money - I'm paying for the examiner - you want me to

pay your expenses too? I thought if I made it real easy for you (those cities I mentioned above are within minutes of you) to take the test that you wouldn't incur any out-of-pocket expenses. But, if you insist, how much do you want? Let us know and I'll send it to you before the test. Any other questions? (If not, let's get started!) All you have to do, now, is to give me a couple of date/times you can be available and I'll take it from there! Agreed?

Subj: Oberg address

Date: 95-06-17 11:40:26 EDT

From: JamesOberg

My snailmail address is

James Oberg

Rt 2 Box 350

Dickinson, TX 77539

EMAIL ADDRESS

JamesOberg@aol.com

Joe Thor

VideoDog

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Garbage in.... Garbage Everywhere...!!



WE live in a strange time. Incredible communications systems exist to spread the word rapidly via the Internet, Satellite dishes, fiber optics, WWW pages. Unfortunately, besides the obvious advantages of such systems, there are some strong negatives as well. Garbage can be distributed faster and cheaper than ever before and almost at the speed of light. Young people who are more computer literate and at an earlier age than we oldsters, begin to believe that everything they see on the Internet must be true, and even more of a problem, that it represents the total truth about any subject including flying saucers, and all sorts of conspiracies. This is a different sort of problem than the rapid dissemination of pornography and hate literature... or the smearing of an individual...

The art of critical thinking is being lost in the shuffle. The need to maintain what I have called a "Gray basket" until there is enough information to reach a rational judgment gets lost in the shuffle.

Comet Hale Bopp

A case in point is the noise about Comet Hale Bopp.... which may turn out to be the Comet of the Century. An amateur astronomer using a CCD (Charged Couple Device) instead of film to take a picture of the comet showed what seemed to be a huge body, 4 times the size of the earth, accompanying the comet as it approached the sun. He made a big noise about his discovery. Immediately a group of remote viewers chimed in with a story about intelligent life on board this body coming to earth and all hell would break loose here. In addition radio signals were supposedly being picked up from this huge body, and, of course, kept secret. HUBBLE Telescope pictures were supposedly being withheld because they showed this body as well. These stories reached millions via Art Bell's huge radio-land audience and his Web page and via postings all over the Internet.

A companion that size should be easily seen by the multitude of amateur and professional astronomers observing Hale Bopp. It is very bright, is dumping lots of dust and water in what is apparently its first pass near the sun. Since instrumentation is better today than in the past, it is hoped that more new information about the formation and behavior of comets and perhaps the structure of solar systems will be obtained. After the observations of the many pieces of Shoemaker Levy which impacted in spectacular fashion on Jupiter, it was expected that pieces might be observed.

Needless to say there was a backlash to the strange stories from professional and amateur astronomers who had been observing Hale Bopp, saying there was no companion. The

companion should certainly have changed the orbit. Hubble pictures of it have been published. There were others who rushed to use their new CCD devices who found a bright "object". Others explained that the location of the "companion" was that of a particular bright star and that the amateur had goofed with his star finder program and missed it.

I contacted Terence Dickinson, Canada's finest astronomy writer, a former editor of Astronomy magazine, a newly anointed member of the Order of Canada, author of a weekly column in the Toronto Star, Canada's largest circulation newspaper, and also, more than 20 years ago, author of "The Zeta Reticuli Incident" the very controversial report on the Marjorie Fish star model research on the Betty Hill Star map. Terry had had a number of calls from people worried about the companion. He checked with a number of professional astronomers and observed and photographed the comet himself.. using film and not CCDs. He noted that there are all kinds of problems with using CCDs if the observer doesn't have a lot of practice. Sort of like there are complications with detection of UFOs by radar. But competent radar operators generally become well aware of these. Terry found no companion either visually or on his pictures.

I am reminded that there was a flurry of concern described in an article by artist Alan Hendry that one or both of the stars Zeta 1 Reticuli or Zeta 2 Reticuli was actually a double star, thus throwing out Marjorie Fish's exciting work because she had said all the Betty Hill pattern stars were single non-variable stars. Hendry didn't actually communicate with the French astronomer, David Bonneau, who had referenced an unpublished comment about the supposed duplicity. When I finally did hear from Bonneau in response to direct inquiry, he noted that neither star was a double. The apparent other star was not there but was an artifact produced by the use of a then new technique called speckle interferometry to try to reduce the influence of atmospheric fluctuations on the observation and improve the resolution of the telescope. There was even a name given to this problem .. "Mickey's Ears". One complication in this case was that Zeta 1 and Zeta 2 Reticuli can only be observed from the southern hemisphere.

For those interested in this fascinating and controversial work, I can offer a limited number of copies of the original 32 page full color booklet "The Zeta Reticuli Incident" and a 4 page update (also by Dickinson) for only US 6\$ postpaid from UFORI, POB 958, Houlton, ME 04730-0958 .

To sum up about Hale Bopp: Having read many postings about the matter, I am satisfied that there is no companion, no threat to earth, no messages being sent. In the words of Ronald Reagan, "Trust, but verify." Have facts carefully in hand before opening mouth. There is a responsibility that goes with communicating new and especially threatening notions to the public.

Carl Sagan. Rest in peace.

On December 20, the final act was written in the long lasting interplay of the public and Carl Sagan, when he succumbed to complications arising from his 2 year long battle with cancer. I have very mixed feelings about Carl. I am 4 months older than he was and grew up in Linden, New Jersey, right next to his hometown of Rahway . We took the same classes in physics and math in the Division of Physical Sciences at the University of Chicago from 1953-1956. After getting my MSc in physics, I left to work in industry on far out, high tech classified R and D programs. He switched to Astronomy and went on to get his doctorate.. a good choice since the launch of Sputnik in 1957 greatly increased the need for astronomers.

Carl has probably done more than any other Earthling to stimulate the public to think about space and man's place in the universe. He often angered other scientists by appearing in public and on high profile programs such as Johnny Carson (perhaps 25 times) and numerous other TV programs. His books and the TV series COSMOS literally reached hundreds of millions of people world-wide. He also had the courage to get involved in areas often thought to be marginal such as the controversial theories of Dr. Immanuel Velikovsky, appearing in a major session at an American Association for the Advancement of Science Debate. He was also a speaker at the AAAS session on UFOs in Boston in 1969, and co-edited the Proceedings as published by Cornell University. He was one of the speakers at the Congressional Hearings on UFOs in July, 1968, and often carried the banner of CSICOP with regard to all matter of paranormal areas especially UFOs.

I have discussed Carl's strange approach to UFOs in many papers dating back to 1973. He had the courage to talk about these fringe areas, but did not always do his homework, often making pronouncements, but rarely investigating. Some spe-cific examples with regard to UFOs based on his comments in his last book "Demon Haunted World" are in my debunkers chapter in TOP SECRET/MAJIC.

During my longest ever lecture tour (25 colleges in 35 days in 15 states in 1973) I spoke at Cornell and had a few moments together with Carl. He had finally read my paper "Ufology and the Search for ET Life" and he recognized that there were serious differ-ences. There was no way to arrange for time together, so he agreed to come to my lecture and sit quietly. I took out some of my zingers. I think it was much to his credit that he attended and didn't take home court advantage to attack. We had very slight contact until 20 years later when I was invit-ed by the UFO Group at Cornell to speak there, by their advisor, a much younger professor in Carl's department. Knowing we had been classmates, the professor arranged to take me from the airport directly to Carl's home for a quiet friendly visit with him and his wife, cookies and coffee. He was too busy to attend the lecture or the two seminars I gave, but a few weeks later he sent me a copy of a preliminary article he was preparing on UFO abductions for PARADE magazine to which he often provided arti-cles. ..asking for comments, omissions etc. He also sent copies of John Mack and others. I found out later that my 12 page re-sponse was apparently the longest from the UFO community. (He ignored almost all the advice.)

After the Larry King Area 51 Two hour TNT-TV program on October 1, 1994, where I was live and Carl was on tape, I challenged him to a public formal debate on UFOs.. There were 3 letters each back and forth. Mine were long, his were short. He didn't say no, but he didn't agree. I stopped pushing when I read that he was getting bone marrow transplants.

Many have asked me how Carl could be so negative about UFOs and so positive about S.E.T.I. I don't have a really good answer. He certainly accepted whatever Phil Klass said as gospel. He had been quite wrong and apparently honestly so about other controversial matters such as the nuclear winter that would be caused by the oil well fires in Kuwait. Was he doing disinformation for the government taking Donald Menzel's place as a debunker? Was he concerned that he would have to admit he had been wrong in 30 years of UFO bashing and SETI encouragement? If saucers are coming here, who needs radio telescopes?

My answer is still "I don't know". I do know that we need more people like Carl Sagan willing to kindle the spirit of adventure and stimulate imagination, especially amongst youngsters, about man's place in the universe. I don't see anyone else on the horizon looming as large. He will be missed. A 27 page, 1993, paper "S.E.T.I., SAGAN, and Science" including my review of his abduction piece as well as other correspondence between us and my "Challenge to S.E.T.I. Specialists" is available from UFORI \$4. postpaid.

WORMWOOD

Another individual posted to Art Bell a very frightening letter claiming he had had access to highly classified material at the Vatican Archives, had seen some material he wasn't supposed to see, and was on the run hiding, with his family having been already been killed by those trying to silence him. Another great story with threatening overtones for mankind. Of course no evidence was presented. Sounds like a science fiction plot. WORMWOOD. These stories always take longer to die than to be spread.

TOP SECRET/MAJIC

My apologies to those who have tried to obtain TSM and been told it was out of stock. Marlowe and Company was slow about getting it to the printer for a second printing, so more than 1300 copies are already on back order. The new printing should be done early in January. Those wanting autographed copies can get them from UFORI for \$25. postpaid. There will be German, UK, and Australian versions out within a few months. There have been a number of friendly Email and fax comments. I am still looking for death bed confessions. Some early history of Area 51 and S-4 pre 1955 would also be greatly appreciated. Several MJ-12 research projects are in progress... about the Truman signature, the typeface on the Truman-Forrestal memo, and the SPECIAL Operating

Manual 1.01 about ET wreckage and alien bodies. Stay tuned.

For some question and answer topics, [click here](#).

Email

I have been getting a great deal of E mail, much asking questions about topics about which I have written a lot in my pre word processing days and not available for transmission via E. Mail. There have been, not too surprisingly, a number of questions about physics. A stamped addressed envelope to UFORI, POB 958, Houlton, ME 04730-0958 will bring 7 pages of material listing my publications, and including a 990 word article on The Cosmic Watergate with shocking quotes from government documents. My paper "Flying Saucers and Physics", (20,000 words and 69 references) is on the list and discusses nuclear rockets, interstellar travel, magneto-aerodynamics, and related matters.

STF COMMUNICATION

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James Oberg

UFO Skeptic

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Profile

1. **UFO Role:** CSICOP Fellow and Manned Space Flight Specialist, Oberg counters many claims made concerning UFOs and the US Space Program.
2. **Editor's Choice:** "[In Search Of Gordon Cooper's UFOs](#)". Article on the problems with the Gordon Cooper UFO story. Original research by Oberg. [Previously unpublished.]
3. **Contact**
 - **Mail:** Rt 2 Box 350, Dickinson, TX 77539
 - **Email:** JamesOberg@aol.com
 - **FAX/Phone:** 713-337-2838
 - **Newsgroups:** Often monitors [alt.paranet.ufo](#), [alt.alien.visitors](#), [sci.space.policy](#).
4. **Biography**
 - **Born:** Nov. 7, 1944, NYC, NY.
 - **Occupation:** Manned Spaceflight Operations Specialist (Past, Present, and Future)
 - **Education:** Per personal correspondence.
 - B.A.-- mathematics (summa cum laude, Phi Beta Kappa), Ohio Wesleyan University, 1966, departmental honors in math (orbital rendezvous), honors in Russian.
 - M.S. (plus additional Ph.D. coursework), Applied Mathematics (Astrodynamics), Northwestern University, 1969
 - M.S. Computing Sciences (compiler design), University of New Mexico, 1972.
 - **Military Service:** US Air Force
 - USAF Squadron Officer School
 - Command and Staff College
 - DoD Computer Institute faculty
 - **Married:** 1969
 - **Children** Two sons (b. 1977, 1984).
 - **Languages:** English, Russian, French. Medium German and Latin.
5. **Works**
 - **Articles:** Author over 400 magazine articles on spaceflight.
 -
 - **Books:** Author of eight books.
 - *Uncovering Soviet Disasters*, (Random House)
 - *Red Star in Orbit*, (Random House)
 - *Pioneering Space*, (McGraw-Hill)
 - *Mission to Mars*, (New American Library)
 - **Upcoming Books**
 - *Space Age Folklore*
 - *Russian Secrets*
 - *Future of the Russian Space Program*

6. Positions

- Opposes most claims regarding astronaut UFO sightings.

Topics

The following are professional credentials provided by James Oberg in personal correspondence.

1. Avocation: Expert in Russian Space Technology, Operations, History, and Policy.

2. Professional Honors

- American Institute of Aeronautics and Astronautics
- National Space Society
- British Interplanetary Society
- Clear Lake Council of Technical Societies
- Russian Academy of Cosmonautics (Nov 12, 1993)

3. Sample Specialties

- Space Station Habitability
- Role of Man-in-Space
- Technology Transfer Vulnerabilities/Opportunities
- Space Hardware and Facilities Assessment
- Accurate Policy Options Analysis
- Problems of high-tech complex systems control center operations and decision-making
- International Cooperation & Competition
- "Lessons Learned" Overviews
- Russian military/civil aerospace operations, accidents, historical controversies
- Divergent, Innovative Alternative Approaches to Complex Technical Problems
- Technological Defenses Against Biosphere Threats ("Planetary Engineering")

4. Recent consultees on Soviet/Russian spaceflight

- Commercial, Governmental, Organizational
 - NASA -- (Johnson Space Center, NASA Headquarters, Marshall Spaceflight Center and JPL)
 - Rockwell Space Operations Company
 - National Air and Space Museum Fairchild Space Company (Germantown, MD)
 - TRW Corporation (Redondo Beach) Hamilton Standard
 - McDonnell Douglas Space Station Office (Washington, DC)
 - Office of Technology Assessment (OTA)
 - Government Accounting Office (GAO) National Science Foundation
 - U.S. Army Engineering Center (Fort Leonard Wood, MO)
 - Association of Space Explorers
 - United States Information Agency
 - United Nations Outer Space Affairs Division
 - British Interplanetary Society
 - RAND Corporation
 - International Space Hall of Fame (Alamogordo)
 - Space Commerce Corporation (Houston)
 - Sotheby's of New York
 - George Marshall Institute (Washington,DC)
 - Boston Museum of Science
 - Teledyne Brown Engineering (Colorado Springs)
 - U.S. Library of Congress Federal Research Division
 - Science Applications International Corporation (New York City)
 - AT&T Bell Labs (Whippany, NJ)

- ABC News (including Evening News, Nightline, Good Morning America)
- CBS News(including 60 Minutes, CBS Evening News, Morning News)
- CNN News (including News, Crossfire)
- NBC News (including Evening News)
-
- PBS NOVA Russian space miniseries "The Russian Right Stuff" (WGBH)
- Radio
 - Voice of America
 - Radio Free Europe
 - Radio Liberty
 - BBC
 - CBC
 - NPR "As It Happens"
- Print Media:
 - Most major U.S. newspapers, newsmagazines, wire services.

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